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GEOGRAPHICAL RECORD.

AMERICA.

SHRINKAGE OF GREAT SALT LAKE.—The level of Great Salt Lake is reported to be steadily falling on account of the large volume of water, tributary to it, which is now absorbed by irrigation enterprises. The Jordan and Bear rivers, City Creek and other tributaries rise in the mountains to the east and, before they were intercepted by irrigation ditches, poured into the lake, the year round, about 10,000 cubic feet a second. The evaporation from the lake surface is very large, and the diminution in the supply is lowering the lake level. It is interesting to learn (*Deutsche Rundschau für Geographie und Statistik*, Jan., 1900) that a similar condition now exists in the Dead Sea, Palestine. That sea was formerly much larger than at present, as is shown by the old beaches, stretching at various altitudes along the basin. Since the middle of the century its level has been very slowly rising till quite recently, but now it is falling. This is due, not to natural causes, but to the increasing quantity of water taken from the Jordan and smaller streams by farmers, who are diverting all the water they can get to their lands. Some of the salt deposits covering the bottom of the lake may now be seen above the water in the shallower places and near the shores. But even though this desiccation should go steadily on it would take a long time to dry up the waters, for the lake is over 1,300 feet deep in the northern part of the basin.

DREDGING GOLD FROM THE SEA.—A number of companies and individuals are preparing to dredge for gold in the sea off Cape Nome, Alaska. This is a new phase of gold mining, and the result of the novel conditions under which gold is found in the Cape Nome region. The gold came originally from the quartz veins in the mountains of limestone and mica schist, from four to five miles inland. In the course of denudation a great deal of this gold-bearing quartz has been gradually carried by water agency down the gentle but continuous slope from the mountains to the sea. Mining was carried on last year along the beach sands for a distance of thirty miles, the gold being found in fine particles from two to five feet below the sand surface. It is also found, under similar conditions, beneath the sea for a considerable distance from the shore,

and dredging is possible because of the shallowness of the water for some distance from the beach.

THE TOCANTINS RIVER.—*Le Mouvement Géographique* says that writers on geography are only just beginning to treat the Tocantins river of South America as an independent hydrographic basin. It should be added, however, that some of the latest geographical works still treat the Tocantins as a part of the Amazon system. A geography recently published in England, for example, says that "The Tocantins form a part of the Amazon system, being only divided from it by some islands." A British school geography, published last year, gives the area of the Amazon basin, and includes the Tocantins in it. Most of the French geographers, likewise, make the Tocantins a part of the Amazon system. M. Reclus, in his description of the Tocantins in the "Universal Geography," several years ago, treated the system as a distinct basin, and was one of the first geographical writers to give the correct idea of it. The river rises far to the south, has a tributary, the Araguaya, which is even larger than the Tocantins, and the joint streams form one of the great rivers of the continent, with a width, for a long distance, of two or three miles; but the river is so impeded by rapids that it is scarcely available for navigation until it widens into the great estuary on which Pará stands. It reaches the Atlantic about forty miles east of the nearest delta branch of the Amazon. Some water from the Amazon enters the Tocantins through several narrow arms of the Amazon delta; but this fact does not make the two rivers a part of the same system any more than the Cassiquiare, which unites the Orinoco and the Rio Negro, makes the Amazon and the Orinoco one hydrographic system.

NAVIGATION OF THE BERMEJO RIVER.—The *Boletín del Instituto Geogr. Argentino* gives some description of the journey of the Messrs. Leach down the San Francisco and Bermejo rivers across the Gran Chaco of Argentina. These two gentlemen are among the most energetic promoters of industrial enterprises in the mountainous province of Jujuy. The San Francisco is part of the Rio Grande del Jujuy and empties into the Bermejo. The explorers had heard that the condition of these rivers had considerably changed and believed they might be found to be navigable. The Government supplied them with three boats specially built for their use, and on March 13 last year they started on their long journey. They found navigation difficult in the San Francisco, and it was a toilsome task dragging and pushing the boats and getting them afloat when they

ran aground. In eight days, however, they reached the Bermejo. At the point where the Rio Teuco branches off from the Bermejo the bed of the latter stream became almost dry; but the Teuco had water of sufficient depth, and they had no trouble whatever in descending that river to the point where it rejoins the Bermejo and thence to the Paraguay river, 146 miles further east. The Messrs. Leach believe that they have fully demonstrated the availability of the Bermejo route to the Paraguay as an outlet for the products of Jujuy. No report so favorable as to the navigability of the Bermejo was made by earlier explorers.

RIVER AND FLOOD SERVICE.—The report of the Chief of the Weather Bureau for 1899 says it is proposed, during the next two years, if sufficient funds are available, to prepare a comprehensive work on the entire navigable water régime of the United States, giving a complete history of all river stations, elevations above tide water, rate of flow of water and data for flood forecasting. No work of this character has yet been undertaken, though its importance has long been recognized. According to the *Deutsche Rundschau für Geographie und Statistik* (Nov., 1899), the system of water forecasts in Austria-Hungary is somewhat similar to that in this country. In the Ministry of the Interior is a Hydrographic Division, with many stations in different localities, whose object is the study of all the rivers in the country and observations relating to precipitation and the height of river waters. The stage of water in all the rivers is reported daily, the observations being made at 8 A. M., and from these data forecasts for the following twenty-four hours are deduced and telegraphed to the Government.

EUROPE.

EUROPEAN EMIGRATION IN THE NINETEENTH CENTURY.—According to an article in *Globus* (No. 24, 1899), about 30,000,000 persons left Europe during the century just closing to seek to better their fortunes in other lands. Up to 1820 only about 250,000 Europeans removed to the Americas, but between 1820 and 1882 more than 17,000,000 Europeans left their homes for the New World. The high tide of European exodus was reached in 1882, when the United States alone received 800,000 immigrants. The two next greatest years in this movement of population were 1888 and 1892, when this country saw 1,140,000 Europeans enter its ports. Between 1882 and 1893 the European outpouring to various marts of the world was over 9,000,000 souls. In the six years ending in

1899 about 3,000,000 Europeans sailed for foreign lands. The world never saw before anything comparable with this tremendous movement of people in so short a space of time as one century. The population Europe has thus lost by emigration in a hundred years is greater than the total number of inhabitants of Great Britain and Ireland in 1860.

NOVOROSSISK FREEZES OVER.—In 1888 the Russians reopened the port of Novorossiysk, on the northeast side of the Black Sea. It has had very rapid development, has become a large wheat shipping port, and its population is now over 35,000. It exported only 46,000 tons of freight in the first year of business; while its exports in 1896, chiefly wheat, amounted to 767,000 tons. Its great recommendation was that its harbor was free from ice the year round. The port, however, froze over in December last, when none of the strongest vessels were able to reach the docks. The shipping business was practically suspended till a thaw came. The Russians, after all, cannot claim any Black Sea port to be unimpeded by ice in winter except Batum.

AFRICA.

PROGRESS IN MADAGASCAR.—*Petermanns Mitteilungen* (III, 1900) reports that General Gallieni is making excellent progress with the geographic and cartographic work began in 1897. His efforts are mainly directed in making a good map of Madagascar. Before the French took possession only the central province of Imerina had been trigonometrically surveyed. The map sheets now completed include 12 sheets on the comparatively large scale of 1:100,000; 3 sheets in 1:500,000, and a one-sheet map of the entire island in 1:2,500,000. The map on the largest scale, 1:100,000, will at present be completed only for the central province, the east coast region and Diego Suarez. When the map of the whole island on this scale is completed it will number 508 sheets. The triangulation thus far carried out has called attention to many errors in the position of places shown on earlier maps. It is gratifying to observe that such excellent progress is making in the mapping of Madagascar, the fourth largest island in the world. The French are making important progress in Madagascar, and the island is sure to have large commercial development. The canals, about one and four-sevenths miles long, which are being cut through the hills that separate the lagoons bordering the sea between Tamatave and Andovoranto, sixty miles south, will be completed this summer (*Revue Française*

de l'Etranger et des Colonies, Feb., 1900). This will give a waterway for passengers and freight extending one-third of the distance on the regular caravan route between Tamatave and Antananarivo, the capital. Thirty miles of this water route were opened for business on May 15 last year, and up to November 1 more than 8,000 passengers were carried, and an average of 30 tons of merchandise was transported daily. The canal will not interfere with the projected railroad from Tamatave to Antananarivo, which, however, will not be built immediately. *Le Génie Civil* says that the wagon road between Tamatave and the capital, to supplant the miserable path that caravans have followed for generations, is now about two-thirds completed, and that the other important wagon road from the capital to Majunga, the chief west coast port, has been completed.

THE TELEPHONE ON THE CONGO —*Le Mouvement Géographique* (No. 7, 1900) says that Boma, the capital of the Congo Free State, fifty miles from the mouth of the river, has been placed in telephonic communication with Kwamouth, 450 miles up the river. As the electric current was not sufficiently strong to carry messages direct from Boma, the town of Tumba, 180 miles distant, was made an intermediate station. The operator there telephones the message to Kwamouth, 270 miles, and in a very few minutes several sentences are thus transmitted between the lower and upper Congo. The extension of the telegraph and telephone service on the Congo is doing a great deal to facilitate business. The commerce of that region is having a large development since the completion of the railroad between Matadi and Stanley Pool nearly two years ago. Last year about 700,000 pounds of ivory, collected by steamers on the upper Congo, were carried down on the railroad and sent to the Antwerp market. Rubber is now gathered at much greater profit, since it no longer has to bear the heavy charge of transportation for 235 miles on the shoulders of porters. In 1887 the amount of rubber collected in the Congo basin was 30 tons, valued at \$23,000. In 1899 the rubber collected in the Congo forests amounted to 3,300 tons, the export value of which was \$9,900,000. The new railroad is also helping the development of navigation on the upper Congo and is stimulating other railroad enterprises. A railroad is now building north from Boma into the French territory of Majumba, which is rich in ivory and rubber and well adapted for large plantations. The road is to be 130 miles long, and the first thirty miles from Boma are now completed.

THE TELEGRAPH TO VICTORIA NYANZA.—The telegraph line from the Indian Ocean to Ripon Falls, where the White Nile leaves Victoria Nyanza, was completed in March. The cable does not yet touch at Mombasa, which is the sea end of the land line. Despatches from Victoria Nyanza must therefore be sent by steamer to be put on the cable at Zanzibar, which occasions a delay of several days. Five years ago, when the building of this line and the railroad alongside were begun, the shortest time in which news from the lake could reach Europe was about four months.

WESTERN MAURITANIA.—In November, 1898, Mr. Coppolani of the Algerian government was sent on a mission to the Moorish and Tuareg peoples, in the west part of the Saharan possessions of France, to establish friendly relations and study the development of Islam in this vast territory, which lies between Senegal and Morocco and forms the hinterland of the large Spanish territory of Rio de Oro. His mission was successfully accomplished. Very friendly relations were established with the people, and the region will hereafter be called Western Mauritania, and will be attached to the government of Algeria under the supervision of Mr. Coppolani. (*Le Tour du Monde*, No. 7, 1900.)

MISCELLANEOUS.

THE WEST AUSTRALIAN GOLD FIELDS.—Gold was not discovered in West Australia till 1885, and the fact that in fifteen years this region has become one of the greatest gold producers gives particular interest to the statistics from the *Scottish Geographical Magazine* (March, 1900) showing the present condition of the industry. The output of gold in 1890 was only 22,000 ounces, valued at \$430,000. In 1898 it was 1,050,183 ounces, valued at \$19,953,395. For the nine months ending Sept. 30, 1899, the output amounted to 1,160,000 ounces, valued at \$22,000,000; and for the month of September alone it was 167,076 ounces, valued at \$3,174,450, which was more than \$80,000 over the best previous record.

TRAVELS OF THE JIGGER.—*Le Tour du Monde* says that the jigger, the small species of flea whose native home is tropical and subtropical America, and whose travels across Africa to Zanzibar were reported a few months ago, has arrived almost simultaneously in India and Madagascar. He was taken to Bombay by coolies returning from Africa. Letters from Nossi Bé, in northwest Madagascar, report his advent there and on the adjoining islands, where he is flourishing and multiplying in the sandy soil. All regions near or in the tropics seem destined to make his acquaintance.

POLAR REGIONS.

ACCORDING TO *Petermanns Mitteilungen*, No. 1, 1900, Dr. Otto Nordenskiöld will lead a Swedish South Polar expedition in July, 1901. His plan is to explore the lands to the south of America, and to establish a winter station on the South Shetland Islands, while his ship is to push as far to the south as possible in the summer of 1901-1902*, returning to the station before the setting in of winter.

THE EXPLORING STEAMER *Southern Cross*, with the Borchgrevink expedition sent out in August, 1898, by Sir George Newnes, arrived at Bluff Harbour, New Zealand, on the 1st April. Mr. Borchgrevink's telegram to Sir George reads:

Object of expedition carried out. Furthest south with sledge; record, 78.50. Present position of South Magnetic Pole located. Zoologist Nicolai Hanson dead. *Southern Cross* safely at Stewart Island. Leaving for Hobart. All well.

BORCHGREVINK.

Ross's highest latitude was $78^{\circ} 10'$ S. He assigned the position of the South Magnetic Pole to $75^{\circ} 5'$ and longitude $154^{\circ} 8'$ E. (*Voyage*, Vol. II, Appendix, No. X.)

IT IS ANNOUNCED THAT a Scottish expedition is to be organized to work in conjunction with the British and the German Antarctic expeditions. The sphere selected for exploration is the Weddell Sea quadrant, south of the Atlantic Ocean, while the British will explore to the south of the Pacific and the Germans to the south of the Indian Ocean.

The Scottish expedition is a private enterprise, under the charge of Mr. W. S. Bruce, who visited the Antarctic in 1892 and 1893, and has since made five voyages to the Arctic.

* Perverse fate and the printer of the *Mitteilungen* send the ship on her way in 1891/92.